

Abstract

A point-to-multipoint communications network connecting multiple subscribers to a single communications line at the service provider distribution equipment, for example in a DSL communications system. A plurality of subscriber communications interfaces are connected in parallel to form a local group in which, at any particular point in time, only one communications interface serves as a master communications interface and the other communications interfaces serve as slaves. Each communications interface may be capable of serving as the master communications interface according to a demand division multiplexing technique, which assigns master status based on upstream data demands. As a communications interface is switched to master status, the communications interface previously holding master status out of the other serially connected communications interfaces is switched back to slave status, capable of receiving downloaded data from the DSL distributor and uploading data packets to the master communications interface. A plurality of communications interfaces can thus be connected to a single communications port without increasing the upstream transmission bandwidth requirements. At the service provider, multiple network modems can each be designed to communicate at a different frequency, either fixed or variable, and thus assigned to single port, with each network modem communicating at a frequency separated from the frequencies of the other network modems, to substantially increase the bandwidth of the transmission medium. The allocation of frequencies can be controlled dynamically by a microprocessor, based on any desired factors and/or bit error rate testing (BERT).